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ABSTRACT

Papers on scientific/technical information and libraries presented at the 1984 IFLA general conference include: (1) "Library Ethics and the Special Library Network in Science and Technology" (Dieter Schmidmaier, East Germany); (2) "The Dissemination of Patent Information by Libraries: An Example Demonstrating the Necessity of Libraries in the Process of National Development" (Eckhard Derday, West Germany); (3) "Scientific and Technical Literature in Developing Countries: A Preliminary Review of Output and Characteristics" (Stella Pilling, United Kingdom); (4) "The Study of Scientific and Technical Literature of the Developing Countries and the Cooperation Between the USSR's State Public Library for Science and Technology and These Countries' Organisations in the Field of Scientific and Technical Information" (I. M. Kharina, USSR); (5) "Scientific and Technological Publications in Assistance Programme for Developing Countries in Africa: A Swedish Project" (Thomas Tottie, Sweden); and (6) "Sudanese Experience: Perspectives from a Medical Librarian" (Phyllis C. Self, United States). (THC)

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Library ethics and the special library network in science and technology

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Dieter Schmidmaier

Library Ethics and the Special Library Network in Science and Technology

For over six centuries librarians or people involved in librarianship have been trying to define the tasks of libraries and the demands made on the profession of librarian as well as on the behaviour of the librarian. Beginning with Richard de Bury and John Durie continued by Gottfried Wilhelm Leibniz, Gabriel Naudé and Friedrich Adolph Ebert, activity in the field of librarianship reached its zenith in the documents of the party and state leadership of the socialist countries. It has always been a matter of the position and the role of libraries in each social order. On the other hand extensive investigations of the ethical behaviour of librarians are relatively recent.

In order to answer the specific question of the ethics of librarianship in the special library network for the scientific disciplines of the natural sciences and technology I would like at first to present a few general concepts. The Austrian librarian Michael Denis (1729-1800) wrote in his epoch-making work "Einleitung in die Bücherkunde" 1777 concerning the librarian amongst other things: "He is at all times imbued with an obliging briskness, receives the users in a cheerful mood, hurries to bring them the requested books, he himself suggests works to them when they are researching indescriminately guides them in their searchings ... In short he loves his library as does a loyal spouse his better half and only thinks of granting it greater perfection".[1] These are ethical principles which would be difficult to tranfer to the 20th century and an attempt to do would certainly create a little amusement. A code for American librarians from 1968 goes much further beginning with a vow[2]: I swear I will practise my profession according to my capabilities and knowledge, conscienciously and earnestly the satisfaction of my superiors will be my highest aim; I will constantly remain aware of the responsibility and faith placed in me. I will maintain

the dignity and the traditions of the profession of librarian. I will not allow racist, religious, ethical and political opinions, personal gain or socialist status to influence the fulfillment of my duty to my profession and society. I will strive to maintain the reputation of this service. Even when threatened I will defend the freedom to read and other basic rights covered by the term democracy.

These bourgeoise vows stem from country which for decades has incited cold war and believes that the suppression of other countries and the laying waste of fertile land represents a constituent part of democracy. Nevertheless the desire of librarians, their struggle for ethical aims can be acknowledged. This code was the cause of numerous discussions in Poland.[3] In Hungary a symposium on library ethics took place.[4] In socialist countries one starts with ethics as a term in Marxist-Leninist philosophy and derives from it standards of behaviour for the librarian. Ethics represent the philosophical theory of morals as a specific form of the practical behaviour and of social consciousness.[5] Lenin described the librarian as the primary member of the educational system[6]: He is the indispensable link, which connects the masser with science and culture. For one cannot predict what technological development will bring in 200 - 300 years. However it is certain that the masser will only be able to participate in cultural work using books. We must approach the work of today s librarian from this point of view.[6]

A code by Gyula Walleshausen is based on various standards and principles including[7]:

- special, up to date knowledge,
- the maintenance of relations to representatives of the profession and active participation in the solving of common problems,
- a selfless attitude in assisting every, reader without exception and a willingness to achieve complete in making the libraries treasure of knowledge available,
- good-willed discretion (confidential treatment of a reader's requests and regarding his ignorance).
- community spirit,

- the ability to assess society's needs and to satisfy the requirements,
- protection of the accumulated written treasures of human knowledge,
- maintenance of the aestheticappearance of the library as a whole, a tasteful arrangement of the interior and the ensuring of the necessary conditions for the reader to work undisturbed.

I.

Library ethics is not a universal term, applicable to all types of libraries. The ethical norms do not affect every library in their entirety[8]; this rule of application finds expression in the natural science and technical libraries. These libraries are characterised by many similarities[9;10] such as

- the importance of the natural sciences and technology for the development of mankind,
- the age of the libraries,
- the size of the libraries,
- the legal status of the libraries,
- sources of information and library stocks,
- relations to information and documentation,
- relations to culture,
- relations to other types of libraries.

From the point of view of the practical application of the principles of our professional ethics these above-mentioned points are not uninteresting, and one could philosophise about many of the details e.g. are personal relations to the user easier to establish in small libraries than in large libraries where often very impersonal relations exist[11] - and the majority of natural science and technical libraries are small libraries. Or: librarians must identify with the users for library use remains, in comparisionto the use of other facilities an occaisional adventure[12], but in fact a library visit should actually became a matter of course.

Special libraries are visited by very demanding users, by researchers, inventors and specialists who are directly involved in production[13]. Allone this small group of problems which I've pinpointed raises questions as to ethical norms. But they are all solvable within a single library. Participation in cooperation between independent universities represents the real yardstick of ethical behaviour[14], whereby two forms of cooperation exist: the legally organised "involuntary" exercised form and the "voluntary" form organised without any official compulsion. I don't want to enter the discussion of the pros and cons of cooperation, but I can according to my modest knowledge and observations characterize it as useful and can only conditionally align myself with the critical comments made by Maurice B. Line[15]. Jozsef Zsidai says simply and aptly: Since there have been least two libraries in existence in the world it has been possible to accept any form of existence[16]. The same author also holds the opinion that subjective factors play a very important role in cooperation: "It is paradoxical but sadly true, that the necessity and feasibility of integration can both be seen to be objectively based on common interest, however, they contain by up to 50 % the function of subjective inclinations. Subjectivity begins at the point at which the director recognises and accepts the necessity of integration and follows this course."[17] The librarian can, therefore, become the sponsor or "brake" on cooperation. It is well-known, that this subjective factor is gaining importance, it is nevertheless rarely explicitly refered to.[18] Cooperation, however, calls for an especially reliable service: "Every partner will have to strive to acquire everything, which he requires, quickly and with certainty within this framework of cooperation. We must satisfy the demands of our partners punctually, quickly and cheaply. We must never avoid our duty to satisfy."[19]

Special library networks are cooperative associations of libraries with almost the same kind of profile regarding stocks. In the GDR such special library networks were created p.e. for the scientific disciplines of mathematics, physics, machine engineering, mining and metallurgy as well as electronics/electrical engineering. The effective solution of these problems[20] calls for important ethical conditions as a prerequisite, in addition to many legal

regulations. Cooperation in a special library network is above all a question of trust between the network partners. No institution in the form of a library should refuse to carry out any task assigned to it or inadequately carry out a task or do this with delay, because all this leads to mutual distrust and can impair the work of the whole undertaking considerably. Each librarian must view the fulfillment of every cooperative task as a matter of principle.

II.

Where and how does a librarian develop a set of library ethics? With certainty it does not develop during training, public opinion only has an unclear picture of the profession of librarian[21] and writers to their bit in spreading superficial representations in their novels and stories.[22] If the librarian can be taught anything about ethics during the period of training using a close combination of theory and practice, then this can only be in the traditional areas of processing and use. Even user training is still relatively unknown and stressed as being rather inconvenient. At the end of his training the work of special library networks means absolutely nothing to the librarian. He is in this way also not granted any motivation for those duties which extend beyond the duties in his own library. Concerning qualifications. "In developing the work of the libraries - and thereby the activities of the networks - one must rely primarily on the librarians. For this reason it is not a matter of indifference how many librarians are at our disposal or what kind of attitudes or what kind of qualifications they possess. We need qualified librarians with varied interests today".[23] József Bauer came to this conclusion concerning the Hungarian special library network for metallurgy and mechanical engineering, which consists of about 200 libraries. Out of 371 members of staff in 1974 were 136 unqualified, in 1978 it was 105. These are thought-provoking figures; for the unqualified have absolutely no motivation whatsoever for a profession with which they are not really familiar. Training must therefore

be assigned considerable importance, however, not only generally and for traditional areas of library work, but also especially in the work of the special library network.

A librarian can only fulfill our expectations if he carries out his work with creative elan. While carrying out his often mechanical work, and during the very repetitive processes in which he is involved, he must constantly be thinking about the results being achieved with the help of the sources of information in the institution to which his library belongs, but also in other institutions, through education, research, development and production. "The fertilizing effect of literature depends in this way to a great extent on the cooperation of the librarian. This creative consciousness is an important element in the work of the librarian."[24] Included directly in this consciousness is the respect for users, through which science becomes a productive force. In this sense the librarian also helps to make science a productive force. Comprehensive stocks naturally increase the value of special libraries and grant the librarian social recognition. But today a single library is no longer able to meet such high demands as those made on it by social practice. For this an association of libraries is required. In order to recognise the requirements of the users a form of behaviour is needed from the librarian which will induce trust. This is just as necessary as the knowledge suited to the task.

An especially important ethical point of concern is the network in-training scheme. A special library network is not created by chance and is not a patent solution through which all expection in all their complexity can be fulfilled within a short period of time[25]. The services of the special library network can only be effective when all participants cooperate in a disciplined manner. For this reason great importance is assigned to regular professional further training. Unfortunately despite good intentions many efforts come to nothing, because those responsible wanted to achieve success too quickly, but were not prepared to expent real effort and time on such a complicated undertaking. The expected returns did not seem to materialize, the number of participants remained unsatisfactory. Anyone who plans such events

without a certain amount of patience and in addition offers unwriting topics, cannot expect a sympathetic reaction. It is especially dangerous to change over to the apparently more convenient written form as represented in the form of circulars. Personal contact can ofcourse be complemented by written information, but, it can never be replaced by it.

III.

Who is accepted for work in a special library network? The answer to this question appears to be technical and organisational. Those entrusted with the task will be able to count how many libraries exist which possess similar or compatible stocks and fix an in their opinion agreeable and manageable size, in order then to lay down criteria for the selection either partly at random or partly using pseudo-scientific methods. They are careful in doing this that they hold considerable responsibility in the quantitative registration of potential libraries: the determination of the size of the network is the biggest problem in the setting-up of any network. On this depends to a considerable extent the future performance of the network. It would be wrong through to say that a network is unworkable or unmanageable if many libraries are included in it. Such conditions are only created by bad organisation. A librarians dissapointment when he is not allowed to work in a network, that is when he "he is left out in the cold", is much worse than having a slightly large community of librarians creating values. In this spirit I would formulate the following: all libraries worked on a full-time basis must be members of the relevant special library network. Only in this way can the basis for cooperation be approached. Elitism can only do damage!

IV.

What do the librarians who have been accepted as members of a network expect? They expect[27]

- assistance,
- support,
- relief,
- advice,
- guidance,

but also

- clear directions,
- material and technical support,
- modern equipment,
- preferential treatment,

and all this in the following fields

- acquisition,
- cataloguing,
- inter-library lending,

but also

- copying,
- organisation of technical equipment;

and this,

- in the field of information/documentation.

Whether sometimes the only question which is asked is "What do I get without doing anything more?" has only been alluded to in passing. Anyway without a drubt one of the essential features is the contact to other colleagues. One can meet colleagues, hear about and see new methods, without a lot of effort check one's own work techniques, adapt technology, rationalise organisation, put operations to the test and fix standards of performance[28]. One can also "simply" obtain information and acquire in unbureaucratic manner a source of information.

V.

Is it possible to coordinate stocks within a special library network? This is also to a great extent an ethical problem, even when it the financial limitations of the establishment represent an objective obstacle to cooperation. The coordination of stocks

demands unconditional discipline, all those involved must be able to trust each other. Egoism on the part of a single institution cannot be allowed.[29] Only if all librarians jointly strive towards a coordination of stocks is speedy inter-library lending possible and only then is the central catalogue a real help. For this the management of the network must create the necessary legal regulations and instructions for methods. One must help people to grasp the fact that no special means need be provided for the coordination of stocks. Lars-Erik Sanner demonstrates this from a Swedish point of view:"The idea of the plan (meant is the Scandia-Plan D.S.) was namely not to bring more money into the system but to better use the existing money, thus getting a better coverage of literature."[30]

VI.

Can inter-library lending within a library network function? It can only function if all members of the special library network have the will to make it function. Everything else is secondary! The prerequisite is the will to coordinate the different stocks. This must be followed directly by the compilation and maintenance of the central catalogue. All complaints during the compilation of this type of catalogue always lead to bad organisation of the work and to inadequacies in the methods.[31] The librarian must quickly provide the central catalogue with the exact descriptions according to the prescribed rules in a straightforward and simple manner. The duty of registration must not be carried out somehow, some time or other, as work allows, perhaps without even knowing the reason why.

Inter-library lending within a network creates basically the same problems as national or international inter-library lending. It is based on the principle formulated by Lars-Erik Sanner for Sweden - after the foreword of the first volume of the printed central catalogue - which reads as follows: "The state public store of books should be regarded as a unity; its geographical distribution should not prevent the common use of its different parts for the promotion of research and development."[32]

He draws this conclusion from an ethical point of view: "Being one of the union catalogue libraries and getting loan requests for that reason is something that gives a library a higher status." Every participant must recognise this and work for others just as quickly and efficiently as for himself.

VII.

Which sources of information take precedence in a special library network? This question is justfied; for publications, often especially those native to the country, are easy to procure. Over and beyond these more usual traditional documents "grey literature" is growing in its extent and importance. One only needs to mention research and development reports, conference literature, travelogues, business documents and universities, as well as maps, construction project documents, standards and patents. "Grey literature" demands a lot of work as compared with conventionally produced and distributed material. It requires conviction as to the necessity of it's procurement, resourcefulness and meticulousness, a sound knowledge of and good contacts to non-conventional establishments, a good knowledge of library theory and library practice - i.e.: an intact relationship to the profession. Frequently participants in a special library network toy with the possibility of using this method to obtain "grey literature" and make this one of many points to the only point of interest.

The procurement of "grey literature" often creates "problems regarding the handling and especially the return of documents intended only for limited use."[33] This is also an ethical problem, since unauthorised inspection of documents can do severe harm to science and business.

VIII.

What relations does a librarian in a special library network have to the staff involved in information and documentation? In many socialist countries special libraries and information

and documentation centres are linked by legal regulations. Within the economy of the GDR special libraries are mostly subordinated to information and documentation centres. In this way an - unfortunately not always untroubled - collegial relationship has developed based on the objective relations between the library and information sciences. When Karin Mittenzwei in concluding a comprehensive analysis written from the GDR's point of view wrote "In order to fulfill the tasks and to achieve our aims it is a matter of creating the preliminaries, which in turn can only be realised through the frictionless and efficient cooperation of both these systems"[34], then she was refering directly to the relations between the staff of the two fields, or as the Hungarians put it: "It cannot be stressed strongly enough, that the seriousness and standard of the documentation work in this field demand an especially high degree of responsibility, professional committment, i.e. ethical conduct from the staff."[35] In a special library network for the natural sciences and technology librarians along with documentation and information staff come together very often according to my experience, they rely on each other in a strange way alone through the ranking of their establishments within a single organism.

IX.

What role does the cultural heritage play in a special library network? Horst Kunze points out that from out of the milieu, in which a librarian operates, grows a quite natural relationship to books and also to old books.[36] This is also valid for scientific and technical libraries but does not express itself to the same great extent as in national and in the traditional university libraries. Only in recent years did voices grow loud expressing the opinion that it also forms part of the tasks of these libraries to concern themselves with literary documents of the cultural heritage.[37] Yet one library cannot do this by itself, for this reason the consideration of these problems within a library network must be viewed as an absolute necessity.[38] We librarians must therefore

take care in this age of modern information technology and in regard to the increasingly intensive discussion about the half-life period of literature that the knowledge of the value of the old stocks is not lost. Library work involving the cultural heritage has always relevance regarding ideology, even if at first sight is often dismissed - especially by outsiders - using phrases such as "dusty", "dead literature", "clear it away" and "nostalgia". Convincing an industrial manager of the need to preserve the cultural heritage is in itself a matter of ethics.

X.

Should one pay for information obtained through a special library network? Gyula Walleshausen sees a contradiction in the fact, that culture is a good for which one has to pay, but that information possesses a value which must be paid for.[39] József Zsidai expresses the opinion that one must recognise the character of information as a good, but: "the determination of costs and the fixing of the type of payment creates many problems of principal, the clarification of which requires much time effort".[40] And this effects cooperation to an even greater extent, in our case therefore in a special library network. Today nobody says anything when due to an infringement of discipline they have to pay late return fines, fines for lost books, however many users groan - even state establishments - when asked to pay a contribution for all kinds of services such as for copies, for obtaining interlibrary loan, for information or bibliographies. This tendency is growing to an even greater extent in the special library networks. Many participants are of the opinion that the swarn community of a special library network lives from a mutual giving and taking and for this reason charges for services are unethical. They also point out that today alone the administration involved in drawing up a bill for such work is actually more expensive than the amount stated in the bill itself. They also point out that besides library and informational services other services covering quite different fields are exchanged between partner establishments (student work-experience, use of electronic data processing equipment, consul-

tation work). It would therefore be logical to dispense with charges.

This is a very comprehensive problem and can only be decided on a case to case basis. Where the value of services balance then charges surely do not make sense, but ... This problem cannot simply be viewed from an ethical point of view. A thought of Maurice B. Line maintains quite correctly, that people prefer to pay for good service than receive something without payment which is useless. And: if librarians in a special library network also ask for payment then they are also encouraged as well as duty bound to give good service."[41]

XI.

How does a special library network create new ethical requirements? These are created partly by the new more demanding and more complicated tasks, by the need to have regard for new forms of information and through the use of modern technology in a special library network. This alters the traditional and familiar relations even in a library organism without any cooperative relations.[42]

In a special library network the application of modern technology is qualitatively and quantitatively easier than in a corpus such as a university but requires thorough preparation on the part of all partners. This requires persistent effort in convincing, in presenting the advantages, reducing anxiety, continuous further qualification, nevertheless, the rapid introduction of all that is new. One must, however, take into consideration that such new endeavours "could cause tension through considerable investment and organisational changes in tradition-loving libraries ... Be that as it may it is above all the question of ethics which provides the basis for dispersing tension arising between the use of old and new methods, because the well-practised and problem-free traditional approach must be exchanged for a certain uncertainty."[43] These statements made by Hungarian colleagues concerning a single special library are valid to an even greater extent for a special library network.

If close cooperation between different professional groups in a single library represents a great problem, then the solution of interdisciplinary questions in a library network is no less problematic. The introduction of new technology demands collegial cooperation with mathematicians and scientists of related professions, the division of labour with information and documentation services requires collegial cooperation with information experts, the application of bibliometric techniques requires mathematicians and social scientists, the construction of a new library calls for the work of architects and engineers in the planning ... In all areas it is a matter primarily of ethical questions. Cooperation between librarians and colleagues from other scientific disciplines promotes respect for each other and helps to solve problems jointly more rapidly and more effectively. Through the example given to each other and through first contacts reservations are quickly over come and numerous tasks can be solved without any contempt and disrespect. At the end of a project an indifferent coexitence or animosity is no longer at all conceivable.

XII.

József Bauer requires general knowledge, knowledge of the profession, politeness and an obliging behaviour, love of order and exactitude, optimism and a good demeanour, a tendency a capability to assimilate that which is new and to display initiative in doing so, helpfulness, patience and stamina, commitment and a knowledge of foreign languages. These points are not just valid for a library. We also need the committed, knowledgeable and enthusiastic librarian in a special library network. Donald Urquhart draws up a balance sheet in his pamphlet "The principles of librarianship" for a decade's work in British libraries.
Here are some of his theses:[45]

- Libraries are for users.
- The best is the enemy of the good.
- No library is an island.
- In considering the use of new techniques and systems, it is necessary to look at the future, no the past.

- The staff of a library should work as a team.
- A librarian's post is not a sinecure for a scholar - a librarian's task is often to facilitate the work of many scholars.
- Libraries can be valuable to society.

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Division: Special Libraries

Section: Science and Technology Libraries

THE DISSEMINATION OF PATENT INFORMATION BY LIBRARIES

an example demonstrating the necessity of libraries in the process of national development

by

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Introduction

During the 48th and the 49th IFLA Council and General Conference in Montreal and Munich the main topic in the public meetings of the Section of Science and Technology Libraries was patent information. Due to the general theme of this IFLA Conference the section decided to continue with this subject. The reason for this decision is based on the fact that especially the dissemination of patent information by libraries can be used as a very good example to demonstrate the tremendous function of libraries in the process of national development. On the other hand; today the general role of patent information for the national development is under discussion, because the awareness of information as a kind of vital natural resource has increased in both industrialized and in developing countries. It is now accepted that the exchange of especially technological information is one important condition for developing and strengthening the national economy of any country.

Meaning and content of some terms in the field of patent information

The patent system is one part of the industrial property system; other objectives are trade marks, designs and appelation of origins. On the other hand beside copyright industrial property forms a part of intellectual property.

Patent information is considered to be a part of the technical information and means the information which is contained in patent documents; it does not mean the information about patent documents. The information which is in patent documents is partly technological, partly legal and commercial. Considering the technological elements - and this is my main objective - it means the information of the content of the invention. This information is laid down in the description and the drawing. By publishing a patent document the invention is disclosed to the public. The legal part contained in a patent document indicates the monopoly rights and these are

described by the content of the patent claims. The commercial information can be derived from a review of patent documents. The existence of a certain number of key patents in a special field of technology may indicate the commercial significance of the technology in question.

If I use the term patent document this expression includes patents for invention, inventors' certificates and utility models and certificates all published by governments. The term patent document and the term patent are very often used as synonyms, but strictly spoken patents are only the exclusive rights which are granted for inventions. Another very often used term is patent documentation. It describes a procedure: the acquisition, storage, classification, indexing, management and dissemination of patent documents and other technical literature such as article, reports, standards, etc. The last mentioned term other technical literature is also described with the term non-patent literature.

Patent documents - an important source of technological information

A few years ago patent documentation was described as the "ugly duckling of the information world." Today this statement is no longer applicable. It is now accepted that the technological information contained in patent documents plays an important part in the field of innovation, and the growth of any national economy is influenced by the fact of how innovative a nation is. The reason that this information became so important is that people have recognized the many advantages of patent documents as a unique source of technological information. Before pointing out these advantages, it should be mentioned that about one million patent documents are published each year worldwide, describing between 200,000 - 300,000 inventions.

What are now the advantages of patent documents as a source of technological information?

1. The information contained in patent documents is a combination; it is partly technological, partly legal and commercial. It is obvious that these features give patents unique value as a special source of information.

2. A study done in the North London School of Librarianship points out that only the content of about 5% of all patents are also published in the so-called non-patent literature. That means that the content of about 95% of all patents do not appear in any other literature.

3. Due to the early publication of patent applications - very often within 18 months from the day of application - patent documents in general give the most recent technology information.

4. As the publication of patent application is fairly quick, the information of new inventions described in patent documents is usually published earlier than in other sources of technological information, e.g., journals, books, etc.

5. The abundance of technological information contained in patent documents allows in special cases research and development "Leap-frogging," which may lead to a patent, the basic content of which is derived from another one.

6. The technological information laid down in patent documents does not only show the general utility of the invention, normally detailed information is provided. In many countries the applicant is obliged by the patent law to describe the invention sufficiently clearly and comprehensively. So it is possible to get an idea of the practical application in industry.

7. Patent documents have quite a uniform presentation in accordance with bibliographic data, abstracts, claims, description and drawing. The claims show the basis of the invention, the description should allow a specialist to execute the invention described in patent documents; and the abstract is a short description of the invention.

8. The abstract has just been mentioned. Many patent documents have an abstract. Therefore it is possible to find out the general idea of the invention in a much shorter time than it would be possible by reading the whole description.

9. As there is a quite uniform presentation, it is easier to understand or to find out the required information, although patents are written in a legal and technological language. It is obvious that one should have a certain kind of experience in reading patent documents. Patent documents very seldom lack clearly defined parts as you might find it in technical literature.

10. The existence of patent families - that means the existence of patent documents in different countries containing nearly the same technical content and filed by the same applicant - enables a searcher to read a document in a language which is familiar to him.

11. Most of the patent documents are classified. The International Patent Classification (IPC) which has been established by an intergovernmental agreement and which is used in your country as well as in about 40 others, allows an easy access to a certain technical problem of any branch of technology. The whole field of technology is divided into nearly 60,000 sub-groups.

12. Patent documents show the date of application. So it is easy to find out whether the invention is still under legal protection. If there is no longer protection it can be used without the consent of the patentee.

13. The study of patent documents may show an engineer the solution to a problem which he wants to solve in the same way. As there is no chance that a patent can be granted for the same invention he may be stimulated to look for alternative solutions.

14. The study of patent documents may show a company what their competitors are doing. This information may be very necessary, e.g., for their own activities in the field of research and development. If there is an application of the competitor for an item of technology which is only in the research and development stage in another firm this would be a hint for the last mentioned firm that there is probably little benefit in continuing their own activities.

15. The study of patent documents of competitors may show a firm what direction the competitor's research and develcpment programme is taking. This knowledge enables a firm to decide whether to continue in the same research and development area or to go to into a direction neglected by the competitor.

16. By considering patent information, a firm might find out whether or not to manufacture a new product for which they think there is a substantial market. This enables a firm to calculate market opportunities.

17. Finally, the study of patent information may avoid duplication of research and development activities. It is calculated that about 30% of all research and development funds are wasted because the examination of patent documents was neglected.

The role of patent information for the economy of a country

It was mentioned that today for any economy information can be considered as a kind of natural resource. This statement is based on the fact that for the growth and development of a country's economy, its society must be innovative. But - in order to be innovative - a society must be well - informed, especially in the

field of technological information. As for a long time the necessity to be well informed was not so strong there is a weakness in handling information. Today we have to learn to become more aware of information and to make efficient use of it. In the consideration of patent information one has to recognize that it plays a substantial role in the field of innovation. The study of patent documents has a kind of stimulating function which may be the starting point for alternative solutions to a special problem. This leading from one idea to another is absolutely necessary in an inventive world.

The transfer of technology into developing countries

The term transfer of technology is a modern one, and it can be defined in different ways it may be used for licensee or know how agreements; I want to use it for the intellectual process which requires communication and cooperation and during which the exchange of technological information is done. On the one hand it means that there is a supplier allowing access to his information, and on the other hand there is a recipient who is able to understand this information. This exchange of information between partners in different countries has become more and more important. It is quite sure that especially the transfer of technology to developing countries plays an important part in the field of industrialization. The development of industries in developing countries may bridge the technological gap in relation to the industrialized countries. It is now accepted that patent information is a unique instrument for the transfer of technical knowledge in order to stimulate the industrialization process.

The role of an industrial property system in developing countries

Kenya is one of the developing countries in which an industrial property system exists. Let me point out some facts which may illustrate the importance of such as system.

1. A patent system serves the purpose of transfer of technology. Most national patent laws require the applicant to disclose his invention. This disclosure and the publication of the invention is worldwide and so it can be studied by others.

2. Another task of a patent system is to publicize technological achievements. This system guaranties that recent technical developments are published very soon.

3. To grant a patent means to establish a legal situation which encourages the transfer of patented technology from the patentee to a licencee.

4. An existing patent office also receives patent applications from abroad. So it can try to absorb the most recent technology and use it for its own purposes.

If we consider these four examples, I think it is quite clear that the existence of an industrial property system is an important factor in technological and economic development.

The influence of socio-economic parameters in developing countries in the field of technology transfer

If we consider the national aims of developing countries, the declared objective of technological transfer is the improvement of the country's socio-economic situation. But technology transfer can only improve it if the introduction of new technology is done by considering the conditions prevailing in developing countries.

It is accepted that developing countries should take part in the technological achievements of the industrialized countries at all levels. In spite of this it is often neglected that there is a big difference between the technology generated in the Western countries and the technological tradition of developing countries. Therefore, very often new technology is imported into a developing country without regarding the technology in use and the social

and economic conditions. So it is obvious that there must be a selection of technology transferred. Only the so-called "appropriate technology" is able to realize the foregoing aims. The study of patent documents can help to find the "appropriate technology" able to be adapted without complication and which can increase productivity.

The role of libraries in the utilization of patent information for the national development

Although the advantages of patent information for the improvement of the national development is now accepted, patent information is not used as much as it should be before starting research and development activities. It was mentioned that about 30% of all research and development funds are wasted due to the fact that a study of patent documents is not done at the beginning of such activities. I believe libraries can do alot in order to improve the use of patent information. In this way I fully agree with the general theme of this conference and claim that libraries are indispensible institutions for national development.

The providing of information through libraries in a technical world

Libraries are institutions with a long tradition and history. Very often their main aims are defined as acquisition, cataloguing and the possibility of giving use to books and periodicals. As we live in a technical world with rapid development in the field of technology it is necessary to ask whether or not these tasks are enough. It was mentioned that information could be considered as a kind of natural resource. In the future, industry and research institutions will be more and more obliged to strive for total information. This can only be done by using all existing information potential; that means by using libraries, databases as well as special information services.

When considering libraries, I believe most of them are not always aware of the role of information in our technical world. When I

consider technical libraries - not only in my country - I have to state that a lot of them know almost nothing about patent information. Many of them don't have collections of patent documents and their staff don't know anything about patent documents. As these libraries don't have knowledge of patent information, they are also very often not able to give advice about such libraries working in the field of patent information.

The foregoing sentences should show you that the traditional task of the libraries has to be extended to a very consistent information supply, including all sources of information. This duty must be learned. Only if there is sufficient support of obtaining the required information, will libraries be a factor in national development.

Libraries and their role in improving the access and the dissemination of patent information

I mentioned that the technological information of patent documents should be more used than it is done at the moment. Nowadays, the role of patent information in the field of innovation is recognized, but in order to avoid the neglect of this information by interested parties it is necessary to offer patent information best suited to their needs. Also in developing countries this can only be done if libraries are involved as well as all other institutions concerned with technological information in this process.

If we are talking of patent information, I want to show some suppositions which must be considered.

1. The library of an existing patent office should especially try to arrange an exchange of newly published patent documents with other patent offices. If there is no possibility for an exchange, libraries should try to buy copies. It should be mentioned that such a collection of major patent offices now contain more than 17-20 million patent documents. Only such a file allows a fairly comprehensive overview of the state of the art.

2. Libraries at all levels - national, regional and sub-regional - should take part in helping to facilitate access to patent information. It is self-explanatory that in such a system the library of an existing patent office has to play the most important part; in many cases it will act as a centre of patent information. If there is no suitable infrastructure of a library system, all other existing institutions, e.g., governmental agencies, research and development institutions, information centres and universities should be used as information offices.

3. The spreading of patent information can only be done sufficiently if there is a network of patent information libraries which may be linked with the library of an existing patent office. As these patent information libraries have to fulfill different tasks - on national, regional and sub-regional level - their standard - material and personnel - may also be different.

4. All libraries should build up a collection of patent documents in relation to their task. The set-up of an extensive collection represents a considerable investment in term of acquisition of the documents, storage and retrieval facilities and also staff to maintain the collection. In order to reduce these costs a selective approach should be taken into account. This can be realized by setting up a collection of patent documents published in countries of nearly the same substantial technological activities. Another possibility is to establish a collection on the basis of technical fields of special interest or in accordance with certain languages.

If patents are granted in a developing country, a whole set of its own publications should be available in each patent information library. There should also be a decision in which physical form - paper, microform or computerized storage - a collection should be set up. All decisions concerning the establishment of a collection of patent documents should be done in very close contact to the users. It is necessary to respect the special requirements, e.g., that of an patent office, a research institution, a company or an individual inventor.

5. The best way to give easy access to the information contained in patent documents is to establish a classified collection in accordance with the International Patent Classification. As this classification system is used in your country, your staff is familiar with it. On the other hand, in most of the important industrialized countries the International Patent Classification is in use. Therefore, most of the acquired patent documents can be obtained in this classified form.

6. In order to make optimal use of the information contained in patent documents, a sufficient number of professional staff is needed who are working in special information departments of the library.

They must be

a) well-trained in various fields of technology,
b) able to make searches of the state of the art,
c) able to train technologists and industrialists in the techniques of searching special technical problems in patent documents, and
d) able to inform companies, institutions and private persons of the usefulness of patent information.

7. In order to improve the dissemination of patent information, profesional staff of libraries experienced in the field of patent information, may organize workshops or training courses, e.g., for engineers or technologists. The preparation of such seminars should be done in very close cooperation with the interested institutions or persons.

Conclusion

This short description of the role of libraries for the dissemination of patent information can only show some major factors in this area so important for the national development.

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Division:

Section: Science and Technology Libraries

Scientific and technical literature in developing countries: a preliminary review of output and characteristics.

by

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Meeting no. 120

ABSTRACT

Very little is known about the published output from developing countries. Statistical data, when available, are often incomplete. This paper gives a general indication of book, journal and 'grey literature' production in the Third World in science, technology and the social sciences. The conclusions reached are that publications from these areas are relatively few, that only a small proportion of published items are at a more advanced level, and that they have only slight impact, that developing countries have made no progress in catching up with the developed world, and that much more research needs to be undertaken in this field.

Scientific and technical literature in developing countries: a preliminary review of output and characteristics

Stella Pilling, British Library Lending Division.

INTRODUCTION

In many countries of the developing world demand for literature on any scale is a relatively recent phenomenon. This may be one reason why very little is known at present about the quantity, nature and quality of the published output from developihg countries. Another reason is the difficulty in obtaining statistics from countries with no systematic collection of data. The statistical data available are often unreliable and incomplete, in many cases only rough approximations. This paper represents a first attempt to explore the relatively uncharted area of book, journal and 'grey literature' production in developing countries in science, technology and the social sciences, insofar as this can be assessed from existing information sources.

Throughout this paper the term 'developing countries' will be used in a broad sense, relying mainly on the definition of a developing country as used by the World Bank[1]. Each of the 142 developing countries in the World Bank list has, of course, its own characteristics, social and economic conditions and problems, and pattern of historical development.

GENERAL FEATURES

The problems shared by developing countries in education and

publishing are well known.. Libraries and bookshops are scarce or inadequate. Publishing houses and printing facilities are underdeveloped, and paper .. often in short supply. Distribution networks are poor and it is frequently impossible to obtain a regular supply of any form of serious printed material outside large cities.

Rapid political change does not favour growth in science and technology and the oral rather than written tradition of many of these nations may also tend to inhibit the development of publishing. There are exceptions, in particular India, which has the third largest English-language publishing output in the world.

A large proportion of the population of developing countries is very young, and they share a common aim in striving to establish basic systems of education and to eradicate illiteracy. As a result there is a fast growing need for textbooks. Higher education has a lower priority; there is less obvious need for journals other than popular magazines and one would expect the ratio of book:journal output to be high.

According to the Unesco Statistical Yearbook for 1982, school textbooks and children's books alone make up at least 20% of the total book output of developing countries, to which must be added textbooks produced for colleges and universities. The very limited market for publications of a higher academic level is reflected in small print runs and perhaps sometimes in high

prices. Poor bibliographic control makes it very difficult to assess the scale or quantity of output, and it also restricts international awareness of, and demand for, such material as is produced. Often the only publishers of works of scientific research within a particular developing country are university presses. Researchers in most developing countries are geographically remote from the international scientific community, have limited opportunities for personal contacts with scientists in industrialized countries, and find it hard to keep in touch with world-wide developments, especially in high technology.

Little basic research is carried out in developing countries, with a few exceptions, such as nuclear energy in India or geophysics in China. There is little obvious need for it, nor is there the money for it. Instead there is an emphasis on field trials and experimentation, and on applying the results of basic research carried out elsewhere to local needs. Research in the Third World tends to be concentrated on subjects such as agriculture and tropical medicine, which have direct relevance to and importance for the countries concerned, and which can be studied *in situ*.

In spite of efforts by developing countries to catch up with the developed world, an analysis of publication statistics suggests that they are falling even further behind. As noted earlier reliable statistical data on publications are scarce. One of the most comprehensive sources of statistics is the *Unesco*

Statistical Yearbook[2], which nevertheless recognizes the deficiencies in its data and the variations in standards of reporting and interpretation. However, over a number of years, providing countries do not radically change their methods of reporting, a broad picture emerges, indicating trends.

In terms of the number of books produced by developing countries, Table 1 and Figure 1 show a rather unsteady increase in the proportion of the world output of books represented by developing countries from 16% in 1955 to 20% in 1980. These results appear encouraging, until they are related to population growth. Table 2 and Figure 2 show that the number of titles produced per million inhabitants increased by 96% between 1955 and 1981 in the developed countries of the world, but by only 21% in developing countries; Asia shows a 13% decrease. In Asia and Africa in general, English is understandably the most common language of publication. Titles alone do not of course give a good total picture of book production and dissemination: 100 books produced in editions of 100,000 will achieve much more penetration than 500 printed in editions of 5,000. This aspect of book production has not been studied in the content of this paper.

Broad figures of production conceal many differences. Methods of book production in the Middle East and North Africa, for example, are limited by the use of Arabic script, which inhibits the adoption of new printing techniques. Also in these areas relatively few works are published in the sciences, largely because there is a very high proportion of religious titles.

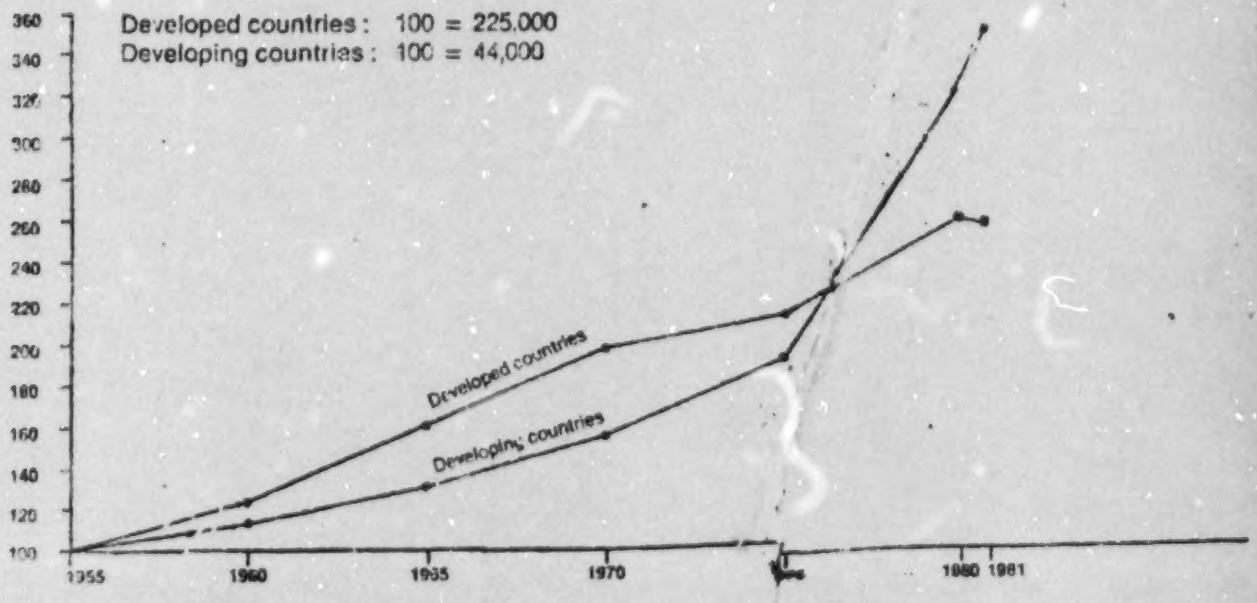
TABLE 1

Book production (titles) in developed and developing countries, 1955-1981

	Titles published (1000s)		Index of titles published	
	Developed countries	Developing countries	Developed countries	Developing countries
1955	225	44	100	100
1960	285	47	127	107
1965	366	60	163	136
1970	451	70	200	159
1975	484	88	215	200
1980	582	144	259	327
1981	576	153	256	348

FIGURE 1

Relative growth of book production (titles) of developed and developing countries, 1955-1981 (1955 = 100)



Source: Unesco Statistical Yearbook, 1983, Table 6.1

Apart from North Africa, there is less difference between countries in Africa than in Asia, where the contrast between India and other countries is very striking - though less striking when India's book production is related to its vast population.

BOOK OUTPUT IN THE PURE, APPLIED AND SOCIAL SCIENCES

If the Unesco figures are broken down to show the relative numbers of books produced by developing countries in the pure, applied and social sciences, in every region (as used in the Unesco tables) the number of titles published in the applied sciences is greater than in the pure sciences, and the number of titles in the social sciences far outstrips both combined (Figure 3). Social science book production from developing countries represents 25-35% of their total book output, with pure sciences averaging 6% and applied science 12%. There is no knowing what percentage of this social science output is at a higher academic level; one would assume that the proportion is lower than in science and technology, and that most of this social science literature is not research-based.

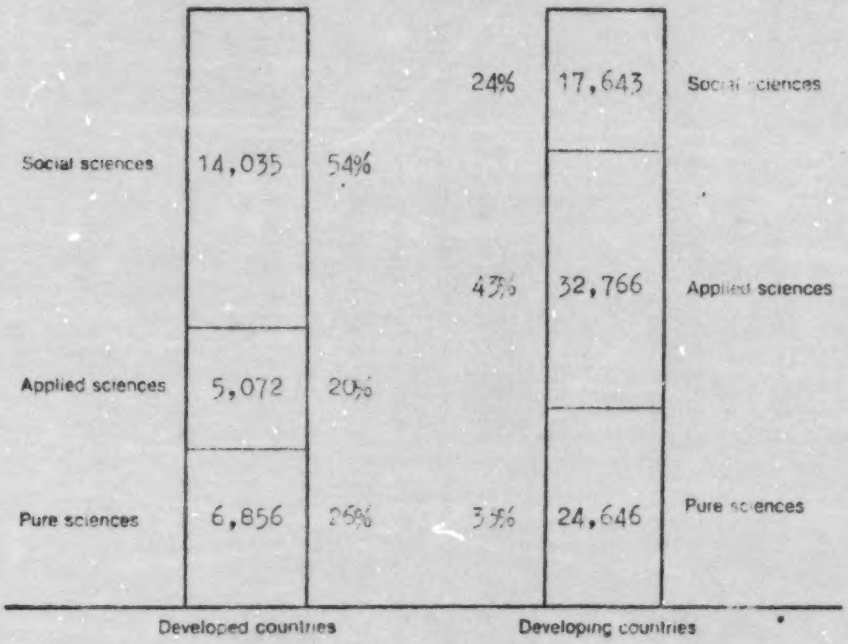
The relative amount of publication in these broad subject areas is in fact not very different from that of the developed countries. In the United Kingdom 9% of book output is in the pure sciences, 19% in the applied sciences and 20% in the social sciences. In West Germany the figures are 5%, 13% and 28%, and in the USSR 9%, 40% and 25% respectively. Again, a quite different picture might emerge if the statistics were confined to

academic or higher level material; one would expect the pure and applied sciences to have a much higher share of output.

Within science, the subjects in which most titles are published in developing countries are agriculture, medical sciences and mathematics. In Nigeria, for example, the most active publishing country in Africa (as well as the largest), 8% of book output is in agriculture, 7% in engineering and 1% in the medical sciences; the 16% of total book production accounted for by the applied sciences contrasts with 4% in the pure sciences. Compare these figures, however, with the proportion of Nigeria's output in subjects such as political science (11%), education (10%), and law and public administration (6%). In India, books on the history and criticism of literature represent 32% of all books published and the social sciences 28%. The pure sciences are poorly represented with 6% and the applied sciences with 13%. Within the applied sciences agriculture is the largest subject group, followed by medical sciences.

The figures in the Unesco Statistical Yearbook can be supplemented from other sources. The British Library Lending Division tries to acquire higher level English-language books regardless of their country of origin, with the exception of official publications of other countries - a category which represents a large part of their output. Even allowing for the greater difficulty of identifying and acquiring Third World books, they represent only 6% of total annual book acquisition (in 1982/83 3,369 out of 55,754); and of the 3,369, 43% came from India.

Relative production of books (titles) in the pure, applied and social sciences in developing and developed countries, 1982



Source: Unesco Statistical Yearbook, 1982, Table 8.2

Proportion of books on the Library of Congress current file in DDC Classes 300, 500 and 600 in selected developing countries

Country	Total number of titles on LCC	Percentage of titles in DDC 300	in DDC 500	in DDC 600
Angola	25	8	–	–
Brazil	246	21	4	3
Cyprus	34	53	–	–
Ecuador	236	25	0.5	2
Ethiopia	59	61	2	29
Fiji	60	52	10	3
India	446	33	5	8
Iran	26	23	4	3
Korea	208	58	–	2
Lebanon	76	27	4	7
Malaysia	68	49	6	9
Morocco	11	45	9	27
Nigeria	392	49	3	8
Sudan	45	71	2	11
Thailand	87	62	2	10

Figures in the last 3 columns are percentages of total numbers of books from the respective countries on the LC file.

Some indication of 'level' is given by the complete catalogue of a 'typical' Indian publisher[3]. This includes a fair number of solid-looking 'scientific' titles, but on closer examination these turn out to be mostly Western titles reprinted for the Indian market, often several years after first publication. Of these titles the majority are evidently of a secondary school, pre-university level, and of these roughly a third are in the pure and applied sciences. The social sciences and humanities represent almost 60% of the entire catalogue.

The Library of Congress probably acquires more books from developing countries than any other library in the world. A search of the Library of Congress current file on-line, which contains book records created from 1977 onwards, provided some idea of the number of titles produced by various developing countries in Dewey classes 300, 500 and 600. Titles in the social sciences represent almost 40% of all the titles on the file and in every country exceed those in pure and applied sciences. Books in the pure sciences account for just over 3%, and in the applied sciences for almost 7% (Table 3).

In spite of the generally poor bibliographic control of material from the Third World, there are some bibliographic tools from which information about book output can be obtained. African Books in Print[4] lists 18,724 titles in print at the end of 1982, and includes 604 publishers and research organizations. The top five African countries in terms of numbers of publishers are:

Nigeria	- 153
South Africa	- 84
Kenya	- 43
Ghana	- 35
Tanzania	- 33

African Books in Print does not cover the book output of North Africa (most of which is in Arabic), nor does it include most official publications. Agriculture and related topics are very well represented. Of the 399 titles in 'Agriculture,' 78 are textbooks, and the rest seem to be higher level academic material. There are 128 titles listed under 'Botany,' with, interestingly, only one textbook amongst them. On the other hand, 'Chemistry' covers 88 titles, of which 83% are textbooks, and 81% of the books listed under 'Physics' are textbooks. Of the items listed in the sciences that are apparently of a higher level, most are published by research institutions attached to universities.

A glance at Indian Books in Print[5] reveals that books in the social sciences make up 37% of the total, with the pure and applied sciences trailing behind with 9% and 13% respectively; 50% of the general class 330 (Economics) is made up of textbooks. The Sri Lanka National Bibliography[6] demonstrates the same preponderance of titles in the social sciences, most of them statutes produced by government departments, while the applied science classes are concerned mainly with agriculture and medical sciences. Analyses of other national bibliographies would probably reinforce this picture.

To summarize the book output of developing countries in the pure, applied and social sciences: books in these disciplines represent a very small proportion of total output, and relatively few titles are of a higher academic level. Most books in these subject areas tend to be textbooks. The social sciences seem to dominate mainly because of large numbers of government publications, laws and statutes. Within the applied sciences, the majority of books of research level are in agriculture of the medical sciences.

JOURNAL OUTPUT IN THE PURE, APPLIED AND SOCIAL SCIENCES

Information about the output of scientific journals from developing countries is even harder to locate than for books. The Unesco Statistical Yearbook attempts to give some indication of the numbers of journals produced by individual countries, but the figures are very incomplete, with no entries at all for many nations. The figures nevertheless show that most of the journal titles of the world are produced by a small number of countries, with very few nations producing more than 2,000. Table 4 gives the output of journals (in all subjects - excluding comics, school magazines, etc.) from a small selection of developing countries. Compare these figures with those given for the USA - 54,398, or France - 10,478. The Unesco figures give no indication of how many of these are higher level journals. Only India reaches a figure comparable with that of some West European countries. The developing countries with the next highest

TABLE 4

Journals published by selected developing countries, 1982

Africa:	Ghana 29
	Tanzania 69
	Malawi 93
Asia:	Burma 3
	India 7,542
	Malaysia 611
	Pakistan 1,261
	Thailand 1,002
South America:	Brazil 1,461
	Chile 89
	Uruguay 332
Oceania:	French Polynesia 17
	Papua New Guinea 72

Source: Unesco Statistical Yearbook 1982, Table 5.16

figures are Mexico (1,577), Brazil (1,461), Pakistan (1,261) and Thailand (1,002). All other developing countries have figures well below 1,000.

Out of the 131,790 journals in all subject groups from all countries submitting figures, those published in developing countries represent 21.5%; and science and technology titles represent 23% of all journals published in developing countries.

Some differences between various parts of the world are predictable. In South America as a whole, 24% of journal output is in the pure and applied sciences, compared with only 11% of journals published in African countries.

The British Library Lending Division acquires serials irrespective of language or country. Obviously some countries are far better represented than others, if only because of likely demand (which is biased towards English) and actual availability (some Latin American countries in particular are poor suppliers). Nevertheless, its collection of serials of an academic or research level, especially in science and technology, is one of the most comprehensive in the world, and analyses of it complement very usefully the Unesco Statistical Yearbook. Although there is no detailed subject breakdown of the Lending Division's serial stock, it has been estimated[7] that at least 60% is in the sciences. Of 56,000 current serial titles taken by the Lending Division, three countries - USA, UK and Germany (the

Federal Republic and the German Democratic Republic combined) - together account for 50%. The top five countries are: USA (12,594), Great Britain (10,884), the two Germanies (4,477), USSR (2,790) and Japan (2,705). Only 9% of currently received titles come from developing countries; the largest single developing country is India, with 2.3% (1,310), followed by Brazil with 0.8% (Table 5 and Figures 4 and 5).

Figures such as these are backed up by statistics produced by some serial subscription agents who have automated their files. The F W Faxon Company estimates that serial titles from developing countries make up less than 10% of the 150,000 entries on their database, which covers all subjects. Information from the Swets database confirms that the output of journal titles from individual Third World countries is very low - e.g., Bangladesh accounts for 24 titles, Chile 76, Ethiopia 22 and Peru 74, whereas the UK accounts for over 7,500.

Although the number of journals from India acquired by the Lending Division is greater than for any other developing country, Indian journals in the pure and applied sciences account for less than 2% of the Lending Division's current serial stock. Titles in the pure and applied sciences from the whole of Africa represent 1%, from Central and South America 4%, and from Asia, excluding India and Japan, 2%. British and American titles in the pure and applied sciences together account for almost 35% of Lending Division stock. Many of the Indian journals are in

TABLE 5

Serials currently received by the British Library Lending Division, 1983, in order of main publishing countries

Country	Titles acquired 1983	% of Total titles acquired	Cumulative
USA	12,480	22.4	22.4
United Kingdom	10,711	19.2	41.6
Federal Republic of Germany German Democratic Republic	4,414	7.9	49.5
USSR	2,793	5.0	54.5
Japan	2,691	4.8	59.3
France	2,334	4.2	63.5
Netherlands	2,124	3.8	67.3
Canada	1,647	3.0	70.2
Italy	1,411	2.5	72.8
India	1,310	2.4	75.1
Australia	1,108	2.0	77.1
Switzerland	1,091	2.0	79.0
Poland	1,052	1.9	80.9
Sweden	795	1.4	82.4
Belgium	749	1.3	83.7
Czechoslovakia	716	1.3	85.0
Hungary	578	1.0	86.0
China	559	1.0	87.0
All others	7,241	13.0	100
	55,804	100	

Serials currently received by the British Library Lending Division -- distribution among countries, 1983

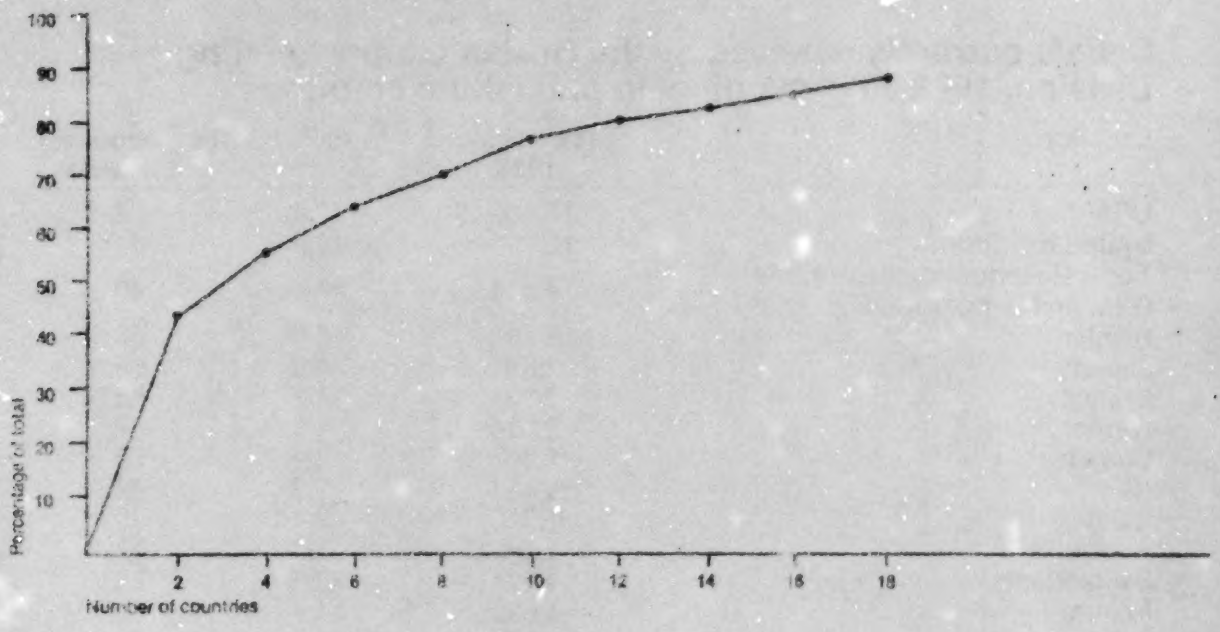
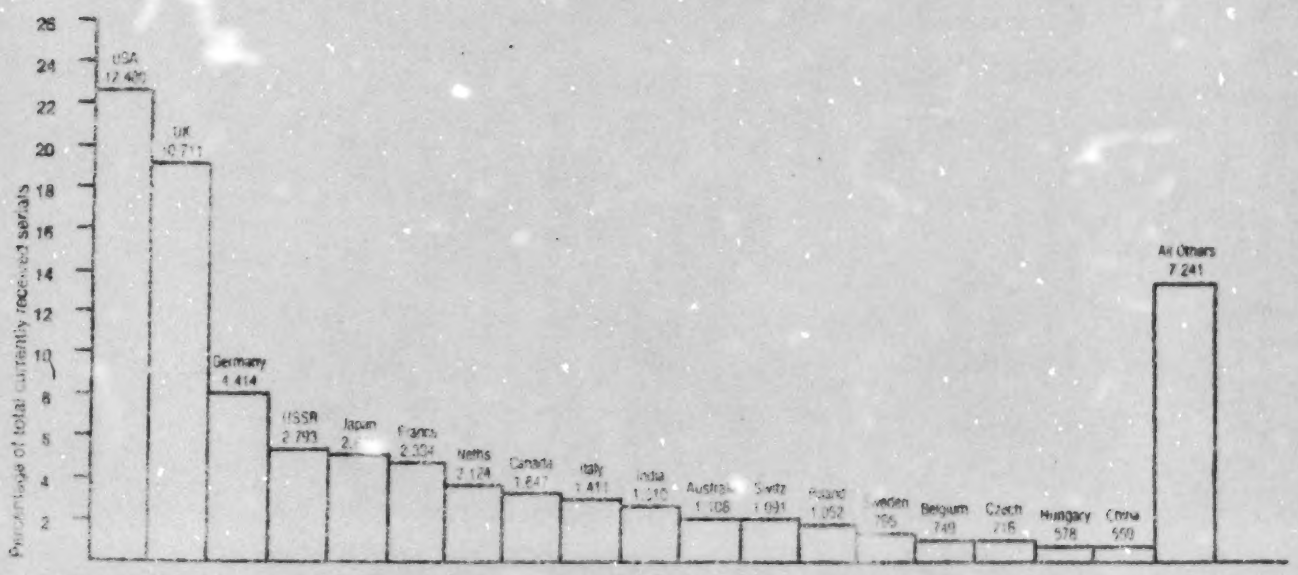


FIGURE 5

Serials currently received by the British Library Lending Division, 1983, in order of main publishing countries



Number of titles currently received at Lending Division, by country

psychology or clinical medicine and earth sciences. Clinical medicine is also the subject of a large proportion of the titles from Central and South America.

The Library of Congress produces regular accessions lists of serials from certain countries of the Third World. From one of these lists[8] it is obvious that Indian serials produced by government and quasi-governmental bodies far outnumber commercially produced serials. These government serials are basically statistics, annual reports and memoranda, and are rarely, if ever, 'pure' journals.

Unesco's World List of Social Science Periodicals[9] is a useful source of information on one major subject area because comparisons can be made between the six editions that have appeared and because the titles in it are all of a 'serious' or higher level (Table 6 and Figure 6). The proportion of total titles accounted for by developing countries increased from 21% to 27% between the 1953 and 1982 editions. The growth in the number of social science journals has been dramatic, even allowing for population growth (Table 7 and Figure 7).

The 1983 edition of Ulrich's International Periodicals Directory[10] lists 64,000 periodicals from all over the world in 556 subject areas. Of the 284 entries under Agriculture, 20% appear to be from developing countries. In Medical Sciences the proportion is 15%, in Mathematics 14% and in Sociology 16%.

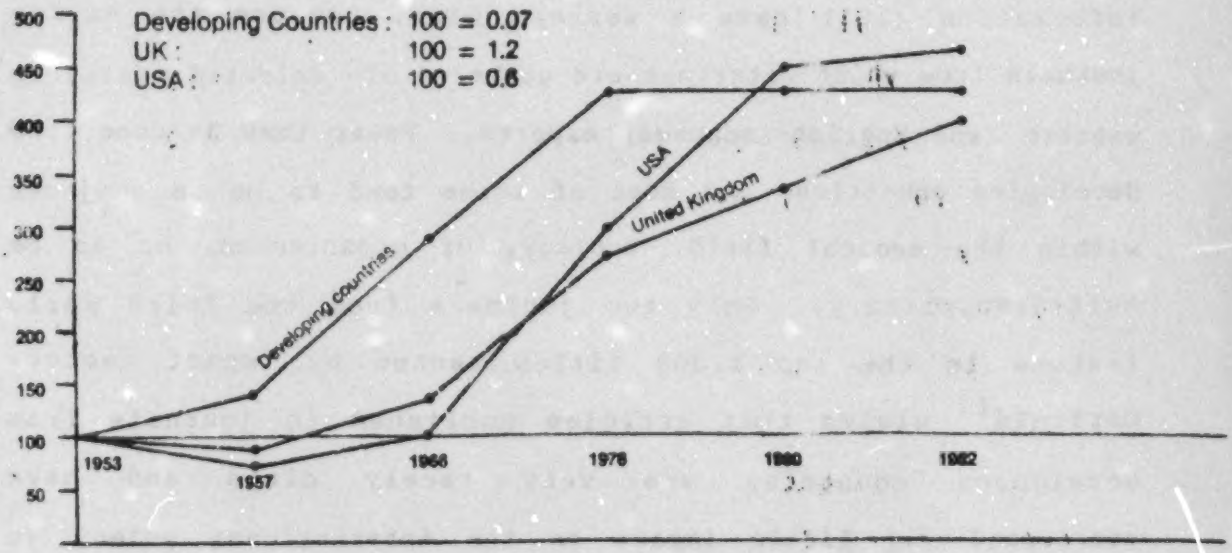
Social science periodicals published per million population in developing countries, U.K. and U.S.A., 1953-1982

Date of edition of WLQSSP*	Titles per million population			Index		
	Developing countries	UK	USA	Developing countries	UK	USA
1953	0.07	1.2	0.6	100	100	100
1957	0.1	1.1	0.5	143	92	83
1966	0.2	1.6	0.6	286	133	100
1976	0.3	3.3	1.8	429	275	300
1980	0.3	4.1	2.7	429	342	450
1982	0.3	4.8	2.8	429	400	467

*World List of Social Science Periodicals

FIGURE 7

Relative growth of social science periodicals published per million population in developing countries, UK and USA, 1953-1982



Source: World List of Social Science Periodicals

Articles in journals published in a developing country are usually written by authors from the same country; there are rarely contributions from authors in industrialized countries, or even from any other developing country. Gupta and Nathan[11] have concluded that the quality of scientific journals from developing countries is far below international standards, not only in physical terms but also in content; any articles containing important research findings will almost invariably be published in the journals of developed countries, for only thus can the articles stand much chance of being read or cited by other researchers. The exceptions are mainly in medicine, where much original research is published in the field of tropical medicine, and in agriculture; in both of these subject areas a good deal of the potential readership is likely to be in the country in question or similar developing countries rather than in the developed world.

The rank lists produced by the Institute for Scientific Information (ISI) have a western bias, because the source journals from which citations are gathered are selected mostly by western (and English-language) experts. Fewer than 3% come from developing countries, and most of these tend to be in subjects within the medical field, zoology, or geosciences, or to be multidisciplinary. Only two journals from the Third World feature in the top 1,000 titles ranked by impact factor. Garfield[12] claims that articles published in journals from developing countries are very rarely cited and have correspondingly little impact on the international scientific

community. One obstacle may be the need to write in English (preferably), Russian, French or Spanish, to stand much chance of being read by other scientists; Garfield has shown that articles from the Third World receive most citations when written in English. This situation is self-perpetuating, since low citation levels are due partly to unawareness and unavailability, and result in low prestige which in turn leads to few citations. Even India, whose authors are responsible for 50% of all articles published by authors from developing countries, has a low impact on the world scientific community; the average article written by an Indian author is cited twice in the first six years, as compared with seven times for the USA, and six times for the United Kingdom. The citations that articles in Third World journals do receive are usually from authors in the same country. Even between developing countries there is little cross-citation.

Another indicator of the influence of scientific journals from developing countries is coverage in major secondary services. A sampling of Electrical and Electronics Abstracts[13] showed that of the 3,000 journal titles covered, only about 5% are from developing countries, and none of the 600 titles abstracted in their entirety is from the Third World. A similar examination of Serial sources for the BIOSIS database[14] revealed that 22% of the publishers of the source journals listed are from developing countries. The Source Journal Index[15] for the ERIC database on educational materials contains fewer than 2% of journals from the Third World, while crude sampling of CASSI (Chemical Abstracts Service Source Index)[16] indicated that Third World material

represented 12% of all the items abstracted. Finally, a small sample of pages from AGRINDEX,[17] showed that entries from developing countries represented approximately 20% of all entries.

It is clear that journals from developing countries do not feature significantly in major secondary services. This may be partly due to inability to obtain Third World journals for indexing, or it may reflect the relatively low quality and quantity of output - probably both explanations are valid.

GREY LITERATURE

'Grey literature' - literature not issued through normal commercial publishing channels - includes scientific and technical reports, theses, some conference papers, translations, trade literature, market research reports, technical recomendations and some official publications. Materials of this kind probably accounts for a gradually increasing proportion of the world's literature, but its bibliographic control is poor, even in very advanced countries; trying to discover what grey literature is produced by developing countries is almost impossible.

To obtain a rough idea of the relative volume of grey literature produced by Third World countries as compared with some developed nations, a small sample of developing countries was run through a group of files covering grey literature on DIALOG. The files were chosen to cover a wide range of subjects, but the choice was

limited by the need for the files to be searchable by country of publication. The subjects were intended to represent those in which it was assumed that some research in developing countries would be taking place. The files searched were:

File	Subject area
ERIC	Education
NTIS	General
AGRICOLA	Agriculture
PTS INTERNATIONAL FORECASTS	Economic forecasting
POPULATION BIBLIOGRAPHY	Demography
AQUALINE	Water resources
MEDLINE	Biomedicine

In almost every instance India dominated the sample of developing countries searched in terms of numbers of items. On AGRICOLA and AQUALINE, for example, India had more entries than several developed countries. Thailand was reasonably well represented on the ERIC file, and Brazil had a fair number of items on the MEDLINE files. On PTS INTERNATIONAL FORECASTS Venezuela, Nigeria and Thailand had numbers of entries comparable with Austria, for example, but again, far behind India's total.

The NTIS file covers the widest range of subjects. Several countries, both developing and developed, were searched within agriculture; biological and medical sciences; mechanical, industrial, civil and marine engineering; behavioral and social sciences; earth sciences and oceanography. Over all the subjects

searched the number of items on the file from developing countries never exceeded 2% of the total number of items on the file, and frequently fell below 1%.

In grey literature, as in books and serials, output from developing countries is evidently far behind that of the developed world. What little grey literature exists is either produced by international organizations based in the developing country, or by university departments.

CONCLUSION

It appears from this study that publications in science, applied science and the social sciences produced in developing countries, whether they are books, journals or 'grey literature,' are relatively few and that little or no progress has been made in catching up with the developed world; that within this limited output only a small proportion of items are at a more advanced level; and that their impact is slight. The main exceptions are in medicine and agriculture; and among countries India stands out.

This paper only scratches the surface of a large and complex topic. There is a vast amount of work to be undertaken in this field, involving detailed analyses of output in different subject areas and a much more careful assessment of quality and originality than has been possible for this study. As a first

step, the production of comprehensive and reliable statistics would significantly aid future research.

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82-SCIE-6-E

IFLA GENERAL CONFERENCE, NAIROBI 1984

Division: Special Libraries

Section: Science and Technology Libraries

THE STUDY OF SCIENTIFIC AND TECHNICAL LITERATURE OF THE DEVELOPING COUNTRIES AND THE COOPERATION BETWEEN THE USSR's STATE PUBLIC LIBRARY FOR SCIENCE AND TECHNOLOGY AND THESE COUNTRIES' ORGANISATIONS IN THE FIELD OF SCIENTIFIC AND TECHNICAL INFORMATION

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Director

the USSR's State Public Library for Science and Technology

Meeting no. 120

SUMMARY

The USSR's State Public Library for Science and Technology is the country's biggest library in the field of science and technology; its collections are widely used by foreign readers, including those from the developing countries.

The Library pays a great deal of attention to the study of scientific and technical literature of the developing countries, using their reference and bibliographical editions.

At present the SPLST of the USSR is carrying out an intensive exchange of books with the developing countries, the volume of which is constantly growing.

The SPLST of the USSR, by means of its printed catalogs, reference books and indexes, regularly informs its readership about the scientific and technical literature from the developing countries available in its collections.

The SPLST of the USSR sends scientific and technical literature gratis to the Soviet cultural centres in 36 developing countries of Asia, Africa and Latin America.

The deepening of cooperation and the exchange of scientific and technical information, in various forms, meet the interests of both the developing countries and the Soviet Union.

THE STUDY OF SCIENTIFIC AND TECHNICAL LITERATURE OF THE DEVELOPING COUNTRIES AND THE COOPERATION BETWEEN THE USSR's STATE PUBLIC LIBRARY FOR SCIENCE AND TECHNOLOGY AND THESE COUNTRIES' ORGANISATIONS IN THE FIELD OF SCIENTIFIC AND TECHNICAL INFORMATION

By I.M. Kharina

Scientific and technical information, in its various forms, is of great importance for the expansion of scientific and production ties between the Soviet Union and the developing countries. Libraries for science and technology and other specialised libraries of our country play an important role in the state system of scientific and technical information. The biggest of them is the State Public Library for Science and Technology of the USSR /the SPLST of the USSR/, the country's main library in fundamental sciences and technology.

The Library has at its disposal the richest collections of the Soviet and foreign literature; these are used by 210 thousand readers, including 4 thousand foreign readers, and among them 740 readers from 60 developing countries.

The SPLST of the USSR attracts readers by its richest collections in fundamental sciences and technology /in 1983 the collection had 7.5 million books/. The readers might use them in the reading-halls where exhibitions are organised or get Xerox copies of articles from magazines and miscellanies, chapters from books, reports from the works of scientific institutions and scientific conferences, etc.--whatever they need.

The readers might also get literature form the SPLST's collections by means of interlending. In 1983, the SPLST of the USSR, through interlending channels, got requests from 140 organisations of 21 countries of the world.

The Library's great wealth is its unique collection of reference and bibliographical literature concentrated in a special reading-h[illegible] The collection includes Soviet and

foreign review-and-bibliography journals, retrospective bibliographical indexes, all kinds of reference books, and also unpublished bibliographical references prepared by various libraries on readers' requests. The copies of these references are given on the readers' requests and are sent out to various organisations, including those abroad. Fulfilling the requests of the developing countries, we have been sending bibliographical references about structural mechanics, strength of materials, pneumatics, hydraulics, reinforced concrete, soil mechanics, equipment of buildings, equipment for heat treatment, turbines, optics and other themes to a number of countries.

The SPLST of the USSR acquires scientific and technical literature from the majority of the countries of the world. Highly skilled bibliographers thoroughly study bibliographical reference books and national bibliographies and select the most valuable editions. The publications of the developing countries are also studied attentively. Not at all every country publishes its national bibliography. For example, as to the 44 developing countries of Africa, we know only 15 national bibliographies /Zaire, Nigeria, Senegal, Tanzania, Algeria, Tunisia, Benin and others/.

The SPLST of the USSR regularly receives books from the developing countries. These are mainly reference books, materials of congresses, scientific conferences, symposia, etc. published in Argentina, Brazil, India, Indonesia, Iran, Kenya and Kuwait--on computing technology, seismology, geology, mining, power engineering, scientific information, library business, etc.

Annually, the SPLST registers over 16 thousand journals received by various organisations of our country by subscription. The share of the journals from 48 developing countries in this mass of editions amounts to about 1,000 titles /2,176 complete sets/. Almost every developing country, including the countries of Africa, publishes economic and statistical journals, like Tanzania, Tunisia, Egypt, Liberia, Malawi, Mali, Marocco and others.

We know over 70 journals about natural sciences and technology, about the development of industry, exploration and protection of the environment published in Kenya, Nigeria, Senegal, Sudan, Egypt, Ruanda, Tanzania, Zimbabwe, Mauritius and in other African countries. They also publish many journals on medicine and agriculture.

The review and bibliographical journals published in the developing countries are the most reliable sources to acquaint us with all the kinds of their publications. As an example we might cite Africa Index to Continental Periodical Literature, a bibliographical yearbook, carrying, mainly, articles from scientific and other African publications; Industrial Abstracts from Tanzania, a review journal of Tanzania which began to be published in 1981 and which deals with the developing industry and power resources of all the developing countries of Africa; a similar journal--Agricultural Abstracts for Tanzania published from the same year on agriculture; a review journal of the Dar es Salaam University /Tanzania/ which informs about scientific research of the University; Sierra Leone Publications, a bibliographical yearbook, Indian Science Abstracts, a review journal which publishes summaries of scientific works done in India.

India was the first country which began a regular and equivalent exchange of books with the SPLST of the USSR 25 years ago. In 1983, 48 different Indian organisations were carrying out the exchange of books with the SPLST of the USSR. To mention some of them--Indian National Centre of Scientific Documentation in New Delhi, Institute of Nuclear Physics in Calcutta, Indian National Academy of Sciences in New Delhi, Central Scientific-and-Research Institute of Glass and Ceramics in Calcutta and many others.

As to Asia, we have an active exchange with the Technical University in Dakha /Bangladesh/, Scientific-and-Research Institute in Malaysia, Singapore University, Geological Dpt. of Iran in Teheran, Council for Scientific

and Industrial Research in Pakistan, Main Board of Geology and Mineral Resources in Damascus, Turkish Commission for Studying Atomic Energy, etc.

There is an exchange with 16 organisations of Argentina, Brazil and Colombia in Latin America. We receive publications on theoretical and applied chemistry, atomic power and other branches of technology.

In 1983, the Library received 460 titles of journals from 71 developing countries, through interlending.

To expand the exchange of books with the developing countries, we have sent out proposals about it to different organisations in Afghanistan, Bangladesh, Indonesia, Kuwait, the Lebanon, Turkey, Thailand, the Philippines, Bolivia, Venezuela, Costa Rica, Mexico, Peru, Cameroun, Kenya, Liberia, Mozambique, Madagascar, Nigeria, Tanzania, Uganda and other countries.

The number of countries which have taken the path of independent development is steadily growing. The state of their economy and its development trends might be judged by the scientific-and-technical literature published by them and by their desire to use the experience of the USSR and of other scientifically and technologically developed countries.

As it has already been mentioned, just a few of the developing countries have their national bibliographical and other editions to inform about their book market, yet, rather many of their publications are reflected in bibliographical and other books of reference of an international inclusion /Ulrich, Sources of Serials, World of Learning, etc./ These are the main sources of information about the publications of the developing countries which allow the Soviet libraries and information centres to select journals and other editions on the themes of their interest.

The State Public Library for Science and Technology of the USSR publishes wide and all-sided information about foreign literature. The information about books is spread by

means of the All-Union Combined Catalog of Foreign Books /4 series of themes/ and the bulletin New Foreign Books.

The information about the periodicals subscribed for by all the organisations of the Soviet Union is provided by the All-Union Combined Catalog of Foreign Periodicals, in two parts: Part I is an Index of the editions subscribed for and Part II is an Index of the editions already received. It should be mentioned here that the whole information about foreign scientific and technological journals is introduced into the pool of the All-Union Automated System of scientific-and-technical information about foreign periodicals which allows to give information to the readers on many parameters of these editions.

The SPLST of the USSR is systematically revealing ever new books and journals on the themes that are of its interest.

For the purpose of wide information about books, there is an index New Foreign Books published; the new journals found out are included into a bibliographical index New Foreign Journals. In 1983, it reflected 75 journals from 26 developing countries. Simultaneously, we reveal all scientific-and-technical journals not yet received by our country--to order their samples from the publishers. The journals which deserve attention are assessed by experts, annotated and included into an Index of Scientific and Technical Journals Not Subscribed for in the USSR. In 1983, it reflected the journals of Thailand, India, Egypt, Algeria, Argentina, Colombia, Pakistan and Syria.

In 1981, the SPLST published an annotated reference book Foreign Scientific and Technical Journals which contained characteristics of 8,702 foreign journals, among them 310 journals from the developing countries. In the first addenda to it 65 out of the 1,879 are the journals of the developing countries; in the second addenda /which is being prepared for publication now/ some journals of the developing countries will also be reflected, presumably 70 titles.

In 1983, the Central Scientific Agricultural Library published a similar reference book about agricultural

journals--Foreign Agricultural Journals--which contained annotations of almost three thousand journals, including 331 journals from the developing countries.

The above-mentioned statistics shows that the Soviet Union does not only buy special literature of the developing countries but that it is actively propagated and widely used by the country's scientific organisations.

The Soviet organisations, in their turn, send out Soviet editions to the developing countries. During the last 7 years the share of the developing countries in the book exchange of the Soviet libraries showed an increase from 3 to 5 per cent. In the same period agreements about exchange were concluded with new organisations from 17 countries. They include Burundi, Gambia, Zimbabwe, Cape Verde Islands, Seychelles, Chad and Ethiopia in Africa, Gayana and Nicaragua in Latin America. At present international book exchange is going on with organisations of 99 newly-free and developing countries.

In the last years, annually, about 20 thousand Soviet books and 70 thousand periodicals and continued editions were sent to the developing countries.

The SPLST of the USSR, in exchange for the books and journals received from the developing countries of Asia, Africa and Latin America, in 1983 sent to them 1,420 copies of journals, books, microfilms and copied articles from the journals. This is the highest figure during all the years of the existence of book exchange in the Library, i.e., since 1960.

Within the frameworks of expanding economic, scientific and production ties with the developing countries, the State Public Library for Science and Technology of the USSR, for some 9 years already, has been regularly sending scientific and technical books and journals gratis to the Soviet cultural centres of 36 developing countries of Asia, Africa and Latin America. In 1983, there were 5,075 copies of books and reviews and 8,752 copies of journals sent to them.

In the past year the greatest amount of literature was sent to Syria, India, Bangladesh, Guinea, Congo.

As to the themes, this literature embraces all branches of fundamental and applied sciences, agriculture and medicine, and also economics.

19,079 books and 42,830 numbers of journals were sent to the developing countries within the 9-year period.

In the last year the SPLST of the USSR sent to Nicaragua over 100 titles of scientific and technical literature in Spanish.

Undoubtedly, the language obstacle greatly hampers the using of the Soviet literature in the developing countries. The majority of editions in these countries comes off in one of the European languages which makes it easier to use them in the Soviet Union. In some countries they have already organised the studying of the Russian language. A great step in this direction has been made by India and the USSR. Soon, within the framework of cooperation, there will be permanent exhibitions of national literatures organised in four cities of India and the USSR; there will be also books published about the study of Indian languages in the Soviet Union and of the Russian language in India. This example will, certainly, be followed by other countries, too.

The deepening of cooperation and the exchange of scientific and technical information, in various forms, are taking place in the interests of the developing countries and the Soviet Union.

117-AFRICA-3-E

SCIENTIFIC AND TECHNOLOGICAL PUBLICATIONS IN ASSISTANCE PROGRAMMES FOR DEVELOPING COUNTRIES IN AFRICA. A SWEDISH PROJECT.

The University of Uppsala in Sweden (founded in 1477) has had good connections with Africa for many years. The large Africana collections in the University Library in Uppsala were a deciding factor in placing the Scandinavian Institute of African Studies (founded in 1961) in the same town. The Institute itself possesses a good library and edits several series of writings pertaining to African conditions. The purpose of the Institute is to advance and maintain scientific research concerning Africa. The librarian of the Scandinavian Institute of African Studies, Mrs Birgitta Fahlander, is also here in Nairobi and will gladly share information, both printed and verbal.

Every year many students and researchers from Africa arrive in Uppsala in order to continue their studies at our university or at the Swedish National University of Agriculture in the vicinity of Uppsala. Many reside in Uppsala for several years until they take their PhD.

It is rather natural then that we in Uppsala were delighted when we heard about a project within the Swedish Agency for Research Cooperation with Developing Countries, SAREC, which has the aim of easing the access by the developing countries to modern scientific journals.

The background to the problem is well known. Scientific research has expanded at an exceedingly rapid pace since World War II. It has been estimated that at present there are more scientists at work around the world than have been engaged in their respective professions during all previous centuries combined. The rapid expansion of research has of course been accompanied by a similar expansion of the quantity of scientific literature. The pace of growth has, however, varied

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between different countries and geographical areas. One might say that the emphasis was placed and still is placed on natural science, medicine (including bio-medicine and the life-sciences) and technology, in conjunction with the fact that the vast majority of the production of such literature takes place in the industrialized nations. The United States of America has been in the lead since the Second World War in the area of scientific literature.

As scientific literature has become more comprehensive and more difficult to survey, there has been a simultaneous rise in costs as prices for this literature have sky-rocketed. An annual increase of costs up to 15% was usual during the 1970's, only to begin increasing in upward stairway progression in 1982 to the present. The latter increase has taken place under the influence of the augmented evaluation of the American dollar.

This development has made scientific literature much more difficult to procure by the developing countries which have to a large degree become independent after the Second World War. The situation has worsened in the wake of the energy crisis. The countries' resources of foreign currency have been more or less absorbed by the payment of the oil-bills.

Examples of developing nations which have stopped the purchase of foreign scientific literature should be considered. These nations have lost the possibility of giving domestic researchers and research students the material enabling them to follow the development within their respective fields of research: these nations have been trapped in a vicious circle. Because of this, both research and economies fall behind successively and everything that this entails in a world where scientific information has become just as important as access to energy for a nation's development, improvement and prosperity.

SAREC has a number of countries already cooperating in research projects in Africa. Botswana, Ethiopia, Moçambique, Somalia, Tanzania and Zambia are examples of such countries. The aim of the project is to endow these countries with scientific journals during a limited number of years. The project should be administrated in an uncomplicated manner. SAREC has a research officer working with each of these countries. An agreement should be obtained with the help of these research officers and authorities in each country dealing with the choices and number of titles. Preliminary 1 000 titles per country have been contemplated. Later SAREC shall make subscription orders to an international subscription service such as Blackwell's, Swet's or the like. The periodicals shall be covered within the framework of those cooperation programmes which SAREC has in each of the respective countries. The priorities of course shall be set in collaboration with the country in question.

The choice of titles is an interesting problem of course. The necessity of core journals can vary from one country to another. Discussions are being held with several countries at present concerning the choice of titles. Botswana, Ethiopia, Tanzania and Zambia are among those countries which have already presented lists with suggestions.

SAREC's project is not unique. Similar projects for the procurement of journals are already to be found within the framework of the development-assistance granted by several other countries such as England, France and the Netherlands. However, it is often true that restrictions have been coupled to periodicals and books from donor countries having the aim of advancing the development of their own languages etc. The Swedish proposal contains none of these restrictions.

It would also be mentioned here that a study is being conducted under the aegis of Unesco to create a system helping developing countries to avail themselves of scientific journals and technical publications. The study is carried out in close cooperation with the UAP-office. Still it might take considerable time before this study will give a concrete result. The Swedish project is limited to a few African countries with which SAREC already has a good collaboration. If the project functions well it might possibly also serve as a pilot project for larger international contributions. Considering the deciding importance that scientific information has for continued progress also within the developing countries this becomes of the utmost importance.

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Sudanese Experience: Perspectives from a medical librarian

by
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Consulting for the World Health Organization and the Faculty of Medicine at the University of Gezira in Wad Medani, Sudan in 1982 was the most exciting and stimulating professional activity I have been involved in for years. I would like to preface my remarks by stating that accurate statistics for Sudan are difficult to obtain and that much of published data is at least ten to twenty years old. The description of my experiences are unique to me. They are my experience of living in a foreign country for a very limited duration of two months. I was in Sudan at a time when the economy was extremely depressed when there were long queues to obtain sugar and petro. Today my reports from Sudan describe a country quite different from my experience two years ago. The primary statistical sources I have used in preparing this paper are: Sudan, a country study a volume in the Area Handbook Series and The Encyclopedia of the Third World. Both of these volumes were published in 1982. In this paper I will attempt to describe 1) the country and people of Sudan, 2) the health care system, and 3) some aspects of my assignment.

I believe it is essential to describe the country and its people to give you the proper perspective of the environment in which I worked. Sudan is the largest country in Africa and is approximately one-third the size of the entire United States.

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The capital is Khartoum and in 1973 its population was 333,906. At this same time Wad Medani, reportedly has a population of approximately 107,000.[1]

Most all of the country is a flat plain. At the center of Sudan the White and Blue Niles converge just south of Khartoum. In the southern part of Sudan is the swampland. The northern region is covered by the Nubian and Libyan deserts and mountainous areas are found behind the Red Sea Coast, in the far south, and in the far west.

Sudan is one of the least densely populated countries in the world. Approximately half of the population live on 15% of the land surface. The population is young with 45% under 14 years of age and with only 3% over 65 years of age.[1,2] The borders of Sudan are not well-guarded and people cross freely into and from neighboring countries. The Sudanese migrate mainly to Egypt for education and other Arab countries for work. Most of the immigrants into Sudan are from Nigeria and Ethiopia.

The official religion of Sudan is Sunni Islam and is practiced by approximately 80% of the population. The majority of people in the southern provinces adhere to their animistic beliefs with approximately 3.5% of the population practicing Christianity.

The Wall Street Journal is quoted as saying "Sudan is bankrupt, the victim of development plans grandiose beyond its capacity."[3] Since 1976 substantial amounts of foreign aid has been coming from Arab countries in support of a plan to convert

Sudan into the Breadbasket of the Arab World. The largest investments have been from Saudi Arabia and Kuwait. Prior to this time the U.S.S.R., western countries, and the People's Republic of China were the major contributors in foreign aid to Sudan. The real per capita income at the end of 1970s was equivalent to $370. U.S.

The largest plot of agricultural land is the Gezira scheme which lies between the Blue and White Niles. The Gezira produces 50% of the country's cotton, 50% of the wheat, 20% of its durra, and 30-40% of its lubia or forage bean. Between 1977 and 1981 cotton production fell by half. Every acre produced 110 pounds less cotton and as cotton exports dropped, so did Sudan's finances. Agricultural production is changing. Sudan is moving away from its dependence on cotton to sugar and oil seeds such as sesame. Sudan's economy is based on long staple cotton. But, because long staple cotton is labor intensive, Sudan plans to produce more medium and short staple cotton because harvesting can be mechanized. Sudan is the second leading exporter of peanuts behind the U.S. I personally prefer the taste of the Sudanese peanut over its American counterpart.

In Sudan education is neither free nor compulsory.The national literacy rate is 32%[4] and approximately 90% of tne population have had no schooling. Only .3% have completed second level and/or have some post-secondary training. The medium of instruction in the primary and intermediate grades is Arabic. However, English is a compulsory subject from the intermediate

grades and on. Within the Faculty of Medicine English is the medium of instruction. This causes great difficulty for the medical students who have had only one to six years of English prior to enrollment in the field of medicine. Linquistically Sudan is fragmented with more than 300 di ferent tribal languages spoken in southern Sudan. Arabic is the linqua franca.

Unlike Education, public health and hospital services are free, but shortages in personnel and drugs have limited the effectiveness of this policy. Health expenditures average approximately $2. per capita and there is approximately 1 physician per 10,000 inhabitants in North Sudan. The prevalent diseases are: Malaria, gastro-enteritis, malnutrition and anaemia, tuberculosis, cerebrospinal meningitis, and schistosomiasis.

Three factors which impede development of Sudan are energy, transportation, and communication sources. Progress made in the economy has been empeded by the inefficiency of the rail and river transportation systems. In 1977 the per capita consumption of gasoline was 13 gal./yr. railways provided for 80% of the freight and 60% of the passenger traffic and there were only 550 miles or 885 km of asphalted roads. In that same year it was reported there were .3 telephones per 100 inhabitants.[2] It takes months to years to have a telephone installed even when individuals have the means to pay for it. These three factors seriously affect the ability of Sudanese health providers to respond to the needs of their patients. During my stay not only did physicians not have the petro necessary to get to the

hospital but they may never have received an emergency call from patients, hospitals, or clinics.

The terms of reference for my employment were:

1. To advise on organizing the library resource center (including AV section), future planning and the day-to-day running of library procedures.
2. To train local staff in relevant skills and procedures as well as cooperate with local senior library staff in designing a workable system for the center.

I began my employment in February 1982 working at the Eastern Meditereanean Office of the World Health Organization in Alexandria, Egypt. After a briefing session with WHO staff, I proceeded into Sudan. With a brief stay in Khartoum I was introduced into Sudanese society for which I was somewhat unprepared. I expected that Sudanese females seldom ate and socialized with males in the same room, that Moslem Sudanese females would not serve liquor, and that generally I would find a very restrictive environment. My first evening in Sudan was quite the opposite. Instead of finding a very austere environment I was in a social gathering which was very similar to a party at a friend's home in the United States except perhaps for the extra large quantity of food. Men and women mingled freely, alcohol and soft drinks were served, and men and women danced to both western and Sudanese music. These situations are atypical and could be expected to occur among those educated abroad and living in the larger and more liberated urban areas. It was at this point that I learned to expect the unexpected and

that the Sudanese community was a very complex society. But more important I had to learn through my own experiences (that of a single western female) and not through the eyes of my male colleagues. One knows this in an intellectual and conceptual manner, but one's expectations of this are quite different in a foreign country where I had no previous experience.

After a short stay in Khartoum a representative of the University of Gezira met and arranged for my travel by bus to Wad Medani. Upon arrival in Wad Medani, which is approximately 180 km South of Khartoum, I went immediately to the Faculty of Medicine, thanks to a series of notes written in Arabic by my contact in Khartoum. From there I was transported to the University Guest House where I was to stay and which housed two expatriate faculty members of the University of Gezira. Their friendship proved to be invaluable to me during my stay in Wad Medani, but here again I learned quickly my experiences and my interpretation of events would vary greatly from theirs. These two men prepared me for problems with transportation and food preparation and taught me various activities of daily living in Sudan, such things as necessary Arabic expressions, how to buy food in the local markets, and how to exchange money. Later when my family joined me I moved to the Gezira Club, a former British club and remnant of the British influence in Sudan. Sudan was under British rule from 1899-1956 as an Anglo-Egyptian Condominium. Today's constitution provides for a Presidential form of Government and since 1973 Sudan has had only one President, Ja'far Muhammad Nimeiri.

The number one topic of conversation in Sudan in 1982 was Petro. Was there any petro today and how much was available. I assumed that transportation would be provided for me to do my work at the Faculty of Medicine, to consult with other librarians, and to make other necessary contacts. All attempts were made in this direction, but in a country like Sudan where fuel is the major limiting factor in its development such an assumption is unrealistic. I quickly learned that when the van did not arrive the first morning I was to start work I would have to find alternative means of transportation. There were no telephones by which the Faculty could notify me of the fuel shortage nor for me to relay my needs to them. The country is based on a very informal information network which proves to be quite effective providing the necessary information regarding petro, sugar, and news about the latest arrivals.

There are two physical locations for the University of Gezira. Currently the Faculty of Medicine is located near Medani Hospital and the medical laboratory and adjacent to the Preparatory College. This location is most convenient for clinical instruction and practice. However, a new facility is being constructed at Nishashiba approximately 10 miles outside of Wad Medani and the University is committed to moving all university faculty and students to Nishashiba. In 1982 the only medical science courses taught at Nishashiba were the anatomy/physiology courses.

The Faculty of Medicine, University of Gezira was established in 1978.[5] The medical program is a five year

program including one year of Preparatory College. Years two and three are devoted to the basic medical sciences. There are approximately 25 faculty members and 280 students. The main emphasis of the medical program is to make individuals responsible for their own health. It is community-based, it stresses prevention, and it relies on community participation. Therefore, the curriculum is designed to be both community-oriented and problem-based. The Medani Hospital owned and operated by the Ministry of Health is the University Teaching Hospital. Department Heads may belong to either the Ministry of Health or the university staffs. The medical program makes use of clinical specialists. The teaching staff includes surgeons who teach anatomy, Ministry of Health staff, other University of Gezira faculty, and colleagues from the University of Khartoum.

To be effective in my role as consultant I met with three groups of individuals to obtain information regarding the needs and philosophy of the medical education program and to develop a common perception to the problems facing the library. The three groups were: 1) Faculty of Medicine, 2) senior members of the University of Gezira Library staff, and 3) medical students.

Figure 1 describes the Primary Health Care Complex for Sudan: The Primary Health Care Unit refers patients to the Dispensary which in turn refers to the rural hospital, health center or district hospital which in turn refers patients to the provincial hospital.

For the provision of primary health care in the villages :here are: 1) traditional birth attendants who have little or no :ormal training and who perform deliveries, 2) village midwives /ho have had at least 9 months of formal training, and 3) :ommunity health workers. The community health worker, who has :pproximately nine months of training in promotion and prevention :ervices, is stationed at the primary health care unit. The illage midwife is not assigned to these units but may use them hen necessary.

The community health worker refers patients to the ispensary, the next level in the hierarchy of health care. hese dispensaries provide out-patient services and are staffed y medical assistants.

The health center is the next level of health care and is taffed by a senior medical assistant, nurses, and a health isitor. The health visitor is a female nurse-midwife and upervises the village midwives. The midwife training program is n essential part of the health care delivery system. Students ho cannot read or write are blindfolded and taught through the enses of touch and smell. Tires and dolls are used to simulate he birthing process and techniques of episiotomy.

The problem of coordinating all of these centers and people ithout adequate communication and transportation systems is normous. Sudan is limited in its ability to purchase the esired quantities of drugs and once purchased Sudan lacks the ecessary storage and transportation facilities. Therefore, the

program of medical education which stresses prevention and community-based problem oriented solutions appears to be an appropriate method to Sudan's health problems. (These slides illustrate health education messages presented in photos and drawings at various clinics and health centers in Sudan.)[6]

The library serving the Faculty of Medicine is one of three libraries for the University of Gezira in Wad Medani. The University employs two professionally trained librarians and fourteen library assistants. In addition to the University staff a Volunteer Service Organization representative had been working at the University for the past three years. The book collection was dated, but the journal collection, although small, was quite current. While I was there the library received two very large shipments of materials, one through Project Hope consisting of approximately 7000 items and another shipment of materials from the African Training Insitute consisting of approximately 5600 items. I spent a great deal of time organizing these materials in a meaningful way for the faculty until the university librarians could incorporate them into the University Library collection.

It was here that I learned the real difficulty of working in Sudan. The large freight crates holding these materials arrived. Each crate was approximately 7 feet tall and 4 feet wide. The faculty had been waiting months for these materials. You can imagine the curiosity generated regarding their arrival. The first problem was where to place these materials. The medical library had limited space as it was. The University Library was

hesitant in assuming the responsibility of incorporating the collection. There were no individuals volunteering to move these materials to my work area on the third floor. Eventually all the crates were unloaded because the Dean of the Faculty intervened and requested that each medical student carry an armload of books to the third floor.

The second shipment of materials from Project Hope generated more difficulties primarily where to locate an additional 7000 books in a library of limited space and lacking the necessary shelving and then how to organize these materials for immediate use by the faculty. Both of these shipments were seen as rare treasures.

I was most impressed by the extensive audiovisual collection owned and operated by the Faculty of Medicine, and housed in a separate and well-controlled area immediately adjacent to the library. Both students and faculty made extensive use of these materials and the audiovisual equipment was well-maintained. Production facilities are available within the Faculty of Medicine and the city of Wad Medani. Faculty members were quite interested in producing their own teaching materials. I, too, found it preferable to develop teaching materials locally than waiting months before materials would arrive from the west only to find them inappropriate for use in Sudan. The medical collection was the most prominent and viable collection in the University Library. I believe this is due to the charisma of Dean Bashir Hamad and his ability to obtain support from his government and financial aid through such organizations as WHO. It

appeared that most of the materials were made available through support from international organizations and not through the Sudanese government.

Dr. Robert Munn, Dean, Library Services, West Virginia University served as a consultant for the University of Gezira. His report, The University of Gezira Library: A Planning Report, which is not dated, but probably written between 1978-80, has served as the blueprint for the University Library. His philosophy is one of centralization, a plan not favored by most medical librarians. It is my belief that the University Library has not been able to accomplish the close relationship and an understanding of the educational philosophy of the Faculty of Medicine as desired by Dr. Munn and that the library serving the Faculty of Medicine should report to the Dean of the Faculty of Medicine in order to be responsive to the needs of Sudan's health community and for the library to become an integral part of the medical educational program.

One of the most worthwhile learning experiences for me was working with the faculty and local architects in designing the Health Manpower Development and Research Center, Media Resource Center. The function of this Center is to bring together the print and nonprint materials in one physical area, to expand user space, and to provide adequate teaching facilities close to the actual learning materials. It is my understanding this center has not yet been built.

Among my recommendations were:

1. Recruit a librarian specifically for the Medical Media Resource Center who would serve in a liaison capacity to the University Librarian.

2. Integrate the audiovisual equipment and software within the Media Resource Center for better access to the collection, thus allowing the audiovisual technician to devote time to photography and more technical areas of audiovisual production instead of circulation.

3. Purchase necessary and recommended medical reference materials and train staff in the use of these materials.

4. Support meetings for medical librarians and their deans on a regular basis to discuss generally the field of medical librarianship, and in particular, ways in which they can cooperate to better serve the health community.

5. Support the development and distribution of journal and audiovisual holding lists of each of the university libraries in Sudan.

6. Support the development of staff and user education programmes in both English and Arabic.

What is the role of a consultant? The article which proved to be the best guide or support for me during my work in Sudan was Esther R. Dyer's "The Consultant's Role in Library

Since 1974, the World Health Organization has been working with the Sudanese authorities to develop a health program especially in the area of primary health care.[8] The World Health Organization is to be commended for the EXCELLENT job it is doing in supporting the Faculty of Medicine at the University of Gezira not only in the development of the medical library but for the general support it offers the academic staff through WHO-sponsored short training courses, tailor made for each faculty member, and other educational programs both in and outside Sudan. Thanks to WHO and other international organizations the Faculty of Medicine has the opportunity to travel, to attend, and to participate in educational programs abroad. The Faculty of Medicine at the University of Gezira is 100% Sudanese and does not depend on expatriate teachers as do other disciplines. This is quite unusual at a time when Sudanese skilled people are attracted to the Gulf States where salaries can be 10 times that of Sudan. Such is the dedication of this faculty to remain in Sudan and improve the health status of their people.

There is a saying that once you drink from the Nile you will return. It was my hope to return to Sudan before the IFLA Conference, but time and money prevented me from doing so. I do correspond with the faculty and am confident I shall return someday soon.

Development: Prelude for a Panel Discussion" published in the IFLA Journal. Not only does she describe "Culture Shock" as I experienced it but also "things to ask or know before a project begins."[7] Frequently I reread this article and always with renewed interest. One section which I will attempt to paraphrase and which has special meaning to me is entitled "What are the qualifications and qualities of a good consultant?" "The most important is the intangible asset of flexibility and cultural tolerance. Precisely those qualities which cannot be evaluated by traditional means such as position or publications." While technical expertise is essential it is often the generalist who can pull together and apply the various concepts of librarianship. "Perhaps the best consultants are those judged to be `mavericks'...not afraid to voice unpopular opinions" synonymous with rigidity and bias toward one system.

As Ms. Dyer states, "invariably there are differences between paper descriptions of employment conditions, expectations and environment and the reality of the situation."[7] I came prepared to train library staff how to use various medical bibliographic reference sources only to find there were no bibliographic sources available. It appeared to be pointless to instruct individuals in use of reference sources such as Index Medicus or Excerpta Medica which were not available and perhaps never would be available. Instead I used my time to examine ways in which to organize incoming materials and assist local staff.

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